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26. (New) A polishing composition comprising a dispersion of particles, the particles comprising a silicon compound with an average particle diameter from about 5 nm to about 45 nm, wherein less than about 1 particle in 10^6 has a diameter greater than about five times the average diameter.

27. (New) The polishing composition of claim 26 wherein the particles are dispersed in an aqueous solution.

dlr 28. (New) The polishing composition of claim 26 wherein the particles are dispersed in a nonaqueous solution.

29. (New) The polishing composition of claim 26 wherein the silicon compound is selected from the group consisting of SiO_2 and SiC .

30. (New) The polishing composition of claim 26 having a single crystalline phase with a uniformity of at least about 90 percent by weight.

31. (New) A method of smoothing a surface comprising the step of polishing the surface with the polishing composition of claim 26.

REMARKS

Claims 1-4, 6-10, 12-15 and 23-31 are pending. By this Amendment, claims 1, 4, 10 and 15 are amended and new claims 26-31 are added. Applicants have amended claims 1 and 15 to advance prosecution. The amendments of claim 1 and 15 are supported by the specification, for example, at page 4, lines 28-31. Claims 4 and 10 have been amended for

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clarity and consistency with the amendment of claim 1. New claim 26 is supported by the specification, for example, at page 2, lines 7-15, page 18, lines 25-29 and page 20, lines 4-14. New claims 27 and 28 are supported by the specification, for example, at page 22, lines 16-17. New claim 29 is supported by the specification, for example, at page 2, lines 15-18. New claim 30 is supported by the specification, for example, at page 2, lines 20-25. New claim 31 is supported by the specification, for example, at page 3, lines 3-6. No new matter is introduced by the amendments or by the new claims.

Claims 1-4, 6-10, 12-15 and 23-25 stand rejected. However, in the Advisory Action of January 6, 2003, the Examiner indicated that Applicants had overcome the double patenting rejection over U.S. Patent 6,290,735, the 35 U.S.C. §§ 102(b) and 103 art rejections based on EP 554 908 and the 35 U.S.C. §§ 102(b) and 103 art rejections based on the Gutsche patent. Thus, these rejections are not discussed further. Applicants respectfully request reconsideration of the remaining rejections based on the following comments.

Obviousness-Type Double Patenting Rejections

The Examiner provisionally rejected claims 15, 23 and 25 under the judicial doctrine of obviousness-type double patenting over claims 9 and 13 of copending application 09/136,483. The Examiner provisionally rejected claims 1-4, 6, 15 and 23-25 under obviousness-type double patenting over claims 1, 3, 4, 14-18, 24 and 26 of copending application 09/433,202. The Examiner provisionally rejected claims 1-4 and 6-8 under obviousness-type double patenting over claims 1-8 of Patent Application Publication 2001/0000912. Applicants consider these rejections together since they are based on the same legal error. In particular, Applicants assert that the Patent Office does not have the authority to reject an application with an earlier priority date over an application with a later priority date since such a rejection undermines patent term extension granted in the statute by Congress. Even assuming arguendo

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that the Patent Office has such authority, the rejection is only justified if there is an actual extension of time to extend the patent term of the present application beyond the term of the patent/application with the later priority date, and even if there is an appropriate patent term extension, a two-way test obviousness should be employed if the claims of the application/patent with the later priority date could not have been included in the first filed application.

The judicially created doctrine of obviousness-type double patenting was established to prevent an improper time-wise extension of rights to exclude under the patent laws. See, for example, MPEP 804 IIB and references therein. All patents issuing from applications filed after June 8, 1995 (six months after the Uruguay round trade agreements were implemented, referred to herein as the post-GATT period) have a patent term of twenty years from their earliest priority date subject to any patent term extension. The changes in patent term must affect the application of obviousness-type double patenting since the foundation of obviousness-type double patenting relates to patent term.

In the post-GATT period, the only justification for an obviousness-type double patenting rejection of an application with an earlier priority date over an application with a later priority date is the term extension of the earlier application. However, the double patenting rejection negates the patent term extension contrary to the statute. Congress enacted the post-GATT patent term extension to account for patent term in the event of delays in prosecution in the patent office. The statute at 35 U.S.C. 154(b) provides for patent term extension. Congress did not provide in the statute for the diminution of the extension due to the filing of a later application, which is the direct effect of imposing an obviousness-type double patenting rejection on a patent application with an earlier priority date over an application with a later priority date. Since Congress did not provide for attenuation of the mandated patent term extension under the long established principle of obviousness-type double patenting, the courts and the Patent Office do not have the authority to undermine the Congressionally granted patent term extension. Imposition of

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an obviousness-type double patenting rejection just to reduce the statutory patent term extension should be an issue for Congress. Furthermore, a patent term extension based on Food and Drug Administration approval under 35 U.S.C. 155 has never been suggested to be a basis for an obviousness-type double patenting rejection.

Assuming *arguendo* that the PTO has authority to impose an obviousness-type double patenting rejection of an application based on another application/patent with a later priority date, the pre-GATT rules provide guidance for the application of double patenting rejections in the post GATT period. Under the pre-GATT rules a **two-way test** for obviousness was applied to determine whether or not to reject a pending patent application for obviousness-type double patenting over a patent or over an application not yet issued as a patent, that was later filed **if the applicant could not have filed the claims in a single application and there was administrative delays of the PTO in prosecuting the first filed application.** Eli Lilly & Co. v. Barr Labs., 251 F.3d 955, 975 (Fed. Cir. 2001); In re Berg, 140 F.3d 1428, 1434 and 1435 (Fed. Cir. 1998). Under the two-way test, the earlier filed application claims must be obvious over the later filed application/patent claims, and the later filed application/patent claims must be obvious over the earlier filed application claims. In re Berg, at 1432. If the two-way obviousness test is not satisfied, the application claims for the earlier filed application may be allowed. Id. The one-way test applies if the application at issue is the later filed application, if both applications were filed on the same day, if there was no PTO delay or if the applicant could have filed all of its claims in one application but elected not to. MPEP 804 II.B.1.(a); In re Berg, at 1434. An applicant could have filed all of its claims in one application when the disclosure of the earlier filed application will support the claims in the later filed application. Id. The two-way test was designed to prevent invalidity for obviousness-type double patenting where the applicants filed first for a basic invention but later for a non-obvious improvement thereof. Id. at 1432.

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Under post-GATT patent term rules, an application with a later priority date expires later than a patent application with an earlier priority date unless there is an appropriately long patent term extension of the earlier patent application. Thus, without a patent term extension, the situation is analogous to the pre-GATT situation in which the later filed application issued first such that it had a later expiration date, **which did not result in an obviousness-type double patenting rejection of the first application over the later application.** See MPEP 804. An obviousness-type double patenting rejection of an earlier priority application over a later priority application is only reasonable if the earlier application has an actual patent term extension such that it expires later than the later application.

The Examiner argued on page 5 of the Office Action of October 28, 2002 that "First, 35 U.S.C. 154(b) includes provisions for patent term extension based upon prosecution delays during the application process. Thus, 35 U.S.C. 154 does not ensure that any patent issuing on a utility or plant application filed on or after June 8, 1995 will necessarily expire 20 years from the earliest filing date for which a benefit is claimed under 35 U.S.C. 120, 121 or 365(c). Second, 37 CFR 1.321(c)(3) requires that a terminal disclaimer filed to obviate a judicially created patenting rejection including a provision that any patent is commonly owned with an application or patent which formed the basis for the rejection." With all due respect, the Examiner's second reason is circular since the justification for a double patenting rejection cannot be that if there is a valid double patenting rejection the terminal disclaimer should require common assignment. This is an argument for structuring the terminal disclaimer and not for making a double patenting rejection in the first instance. The patent term extension rationale is discussed above.

Assuming *arguendo* the courts and the Patent Office do have the authority to impose an obviousness-type double patenting rejection of an application with an earlier priority date over an application, it should only be imposed after a determination is made that a patent term extension will extend the term of the application beyond the term of the application with the later priority date.

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Then, the obviousness-type double patenting rejection must be applied with due notice to the judicial framework imposed under pre-GATT law for an earlier filed application rejected for double patenting over a later filed patent. In particular, **the existence of a patent term extension under 35 U.S.C. 154 indicates that a delay has already been caused by the Patent Office, as officially recognized by statute. Thus, unless the applicant could have filed the claims in the application with the earlier filing date, a two-way obviousness test must be used to determine whether or not an obviousness-type double patenting rejection is proper.** The Examiner did not determine that a term extension would extend the term of the present application beyond the term of the later filed applications, and the Examiner did not use a two-way obviousness test. Thus, even assuming arguendo that the Patent Office has authority to undermine the patent term extension provisions imposed by Congress, the rejection still was not properly based on the presence of an appropriate patent term extension and on a two-way obviousness evaluation. Therefore, the rejections are improper and should be withdrawn.

Applicants respectfully request the withdrawal of the obviousness-type double patenting rejections of claims 15, 23 and 25 over claims 9 and 13 of copending application 09/136,483 of claims 1-4, 6, 15 and 23-25 over claims 1, 3, 4, 14-18, 24 and 26 of copending application 09/433,202, and of claims 1-4 and 6-8 over claims 1-8 of Patent Application Publication 2001/0000912.

Rejections Over Shimizu et al.

The Examiner rejected claims 1, 4, 6, 9, 10, 12-15 and 25 under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 4,842,837 to Shimuzu et al. (the Shimuzu patent). Specifically, the Examiner asserted that the Shimizu patent "teaches silica particles used in polishing slurries. The particles have a monodispersed uniform particle size of 50 nm or less." While Applicants maintain that the Shimizu patent does not teach particles with the uniformity

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claimed herein, to advance prosecution Applicants have amended claims 1 and 15 to indicate that the particles comprise a non-silicon metal compound. The Shimizu patent is limited to the discussion of silica, i.e., silicon oxide. Therefore, the Shimizu patent does not anticipate claim 1, claim 15 or any claim depending from claim 1 and claim 15. Applicants respectfully request withdrawal of the rejection of claims 1, 4, 6, 9, 10, 12-15 and 25 under 35 U.S.C. § 102(b) as being anticipated by the Shimizu patent.

Rejections Under 35 U.S.C. § 102 Over Rostoker '194 or Rostoker '715

The Examiner rejected claims 1, 2, 4, 6, 7, 9, 15, 23 and 25 under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 5,389,194 to Rostoker et al. (the Rostoker '194 patent). The Examiner also rejected claims 1, 2, 4, 6, 7, 9, 15, 23 and 25 under 35 U.S.C. § 102(e) as being anticipated by U.S. patent 5,626,715 to Rostoker (the Rostoker '715 patent). Applicants incorporate by reference the discussion of this rejection from the Amendment After Final of December 18, 2002. In response to those arguments, the Examiner asserted in the Advisory Action of January 6, 2003 that the cases cited by Applicants were "not applicable here since they are based on applications, not patents. Applicants have not presented any evidence or case law showing that a single declaration is considered by the courts as a 'preponderance of evidence' sufficient to invalidate a patent." Applicants respectfully request reconsideration of the rejections based on the following analysis.

With all due respect, the Examiner has mischaracterized the case law. In Ex parte Logan, the prior art was a patent (US 4,386,560 to Ditty), which internally references another application to Ditty 06/041,767. 38 USPQ2d 1852, 1855 (USPTO BPAI 1994)(unpublished). The rejection was based on the prior art patent, not an application. In the Logan case, a Declaration combined with other argumentation was found by the board to overcome the rejection. Id. at 1856 ("Under the circumstances recounted above, we believe that the appellant

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has successfully carried his burden of rebutting the presumption of operability of the Ditty reference by a preponderance of the evidence."). Also, In re Sasse involved prior art patents. 207 USPQ107, 108 (CCPA 1980). The presentation of a Declaration by the inventor was successful to overcome the showing by the patent office and shift the burden back to the patent office to present additional evidence to maintain the rejection.

Whether those skilled in the art already possessed the necessary precursors is an issue subject to a shifting burden of proof. To explain, when the PTO cited a disclosure which expressly anticipated the present invention, i.e., Guillot [patents], the burden shifted to the applicant. He had to rebut the presumption of operability of Guillot by a preponderance of the evidence. Applicants attempted to meet that burden by demonstrating that one skilled in the art would have been unable to produce the necessary precursors. The Sasse declarations (Sasse) have been relied on to show that conventional ammonolysis of a heterocycle halide would have been a total failure; either TCT would fail to react with ammonia, or it would yield a useless, tarry mass.

The burden of proof was once more upon the PTO to rebut the Sasse contention of non-enablement. The board successfully did this in its new § 196(b) rejection. Wagner and Zook clearly stated that heterocyclic amines, i.e., 2-methylamino and 2-amino DCT, were "quite often" prepared in this manner.

Id. at 111, 112 (internal citations omitted, emphasis added). Thus, the declaration by the inventor was successful to rebut the original rejection. In the present case, the Examiner has failed to present any objective evidence to rebut Applicants' expert.

The point is further taken in In re Payne, 606 F.2d 303, 315, 203 USPQ 245 (CCPA 1979) (citing In re Hoeksema, 399 F.2d 269, 275, 55 CCPA 1493, 1501, 158 USPQ 596, 601 (CCPA 1968)), where the Court stated, "To successfully rebut the examiner's prima facie case of enablement, it was incumbent upon Payne [appellant] to introduce affidavits or other factual evidence in support of his position. ...facts set forth in an affidavit (37 CFR 1.132) of an expert in the field suggesting that inoperativeness, would be highly probative." Id. (citations omitted).

Since Professor Singh's Declaration establishes by at least a preponderance of the evidence that the Rostoker patents do not put Applicants' invention in the hands of the public and

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since the Examiner has presented no objective evidence contrary to Professor Singh's Declaration, the rejection cannot stand. Applicants respectfully request withdrawal of the rejection of claims 1, 2, 4, 6, 7, 9, 15, 23 and 25 under 35 U.S.C. § 102(b) as being anticipated by the Rostoker '194 patent and the rejection of claims 1, 2, 4, 6, 7, 9, 15, 23 and 25 under 35 U.S.C. § 102(e) as being anticipated by the Rostoker '715 patent.

Rejections Over Shimizu and Secondary References

The Examiner rejected claims 1, 2, 4, 6-9, 12, 15, 23 and 25 under 35 U.S.C. § 103(a) as being unpatentable over the Shimizu patent in view of the Sandhu patent, the Rostoker '194 patent, the Rostoker '715 patent and the Gutsche patent. Applicants incorporate by reference the discussion of this rejection from Applicants' Response of December 18, 2002. To advance prosecution of this application, Applicants have amended claims 1 and 15 to be directed to particle collections comprising non-silicon metal compounds. The Shimizu patent is directed to silicon oxide particles. In view of the amendments, the Shimizu patent is no longer relevant for the rejection. As discussed in the Response of December 18, 2002, the Sandhu patent, the Rostoker '194 patent, the Rostoker '715 patent and the Gutsche patent do not make up for the deficiencies of the Shimizu patent. Therefore, the combined disclosures of the Shimizu patent, the Sandhu patent, the Rostoker '194 patent, the Rostoker '715 patent and the Gutsche patent do not render Applicants' claimed invention obvious. Applicants respectfully request withdrawal of the rejection of claims 1, 2, 4, 6-9, 12, 15, 23 and 25 under 35 U.S.C. § 103(a) as being unpatentable over the Shimizu patent in view of the Sandhu patent, the Rostoker '194 patent, the Rostoker '715 patent and the Gutsche patent.

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Rejections Over Rostoker '194 or Rostoker '715

The Examiner rejected claims 1, 2, 4, 6-9, 12, 15, 23 and 25 under 35 U.S.C. § 103(a) as being unpatentable over the Rostoker '194 patent or the Rostoker '715 patent. The Examiner asserted that "both of these references teach a method of polishing a semiconductor surface using a polishing composition composed of particles dispersed in an aqueous solution where the polishing is performed using a polishing pad." However, the Rostoker '194 patent and the Rostoker '715 patent, taken alone or together, do not establish a prima facie case of obviousness because they do not teach or suggest particles with the properties specified in Applicants' claims. The deficiencies of the Rostoker patents are described in detail above and in the Response of December 18, 2002, which is incorporated herein by reference. Applicants respectfully request the withdrawal of the rejection of claims 1, 2, 4, 6-9, 12, 15, 23, and 25 under 35 U.S.C. § 103(a) as being unpatentable over the Rostoker '194 patent or the Rostoker '715 patent.

Rejections Over Sandhu and Secondary References

The Examiner rejected claims 1-4, 6, 15 and 23-25 under 35 U.S.C. § 103(a) as being unpatentable over the Sandhu patent in view of the Gutsche patent, the Rostoker '194 patent and the Rostoker '715 patent. The Examiner asserted that the Sandhu patent "teach[s] a method of smoothing a surface using a chemical-mechanic polishing composition comprising alumina or silica abrasive particles dispersed in either an aqueous or a nonaqueous solution." The Examiner cited the secondary references for disclosing conventional chemical mechanical polishing.

The deficiencies of the Sandhu patent are described in detail in previous responses with respect to the failure to teach the claimed narrow particle size distribution. Applicants' Response of September 6, 2002 is incorporated herein by reference. The secondary references do not make up for the deficiencies of the Sandhu patent, as described above. Therefore, the combined disclosures of the cited references do not establish a prima facie case of obviousness

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because they do not disclose all of the elements of Applicants' claimed invention. Applicants respectfully request the withdrawal of the rejection of claims -4, 6, 15 and 23-25 under 35 U.S.C. § 103(a) as being unpatentable over the Sandhu patent in view of the Gutsche patent, the Rostoker '194 patent and the Rostoker '715 patent.

CONCLUSIONS

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



Peter S. Dardi, Ph.D.
Registration No. 39,650


Customer No. 24113
Patterson, Thuente, Skaar & Christensen, P.A.
4800 IDS Center
80 South 8th Street
Minneapolis, Minnesota 55402-2100
Telephone: (612) 349-5746

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June 30, 2003
Date


Shari R. Thorndike

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ATTACHMENT
REDLINED AMENDMENTClaims As Amended

Please substitute the following amended claims for those currently pending:

1. (Twice Amended) A polishing composition comprising a dispersion of particles, the particles comprising a non-silicon metal compound[s] and having an average particle diameter from about 5 nm to about 50 nm and a distribution of diameters such that at least about 95 percent of the particles have a diameter greater than about 60 percent of the average diameter and less than about 140 percent of the average diameter.
4. (Amended) The polishing composition of claim 1 wherein the [particles comprise a composition] non-silicon metal compound is selected from the group consisting of [SiO₂, SiC,
TiO₂, Fe₃C, Fe₇C₃, Fe₂O₃, Fe₃O₄, MoS₂, MoO₂, WC, WO₃ and WS₂.
10. (Amended) The polishing composition of claim 9 wherein the [particles comprise a composition] non-silicon metal compound is selected from the group consisting of [SiO₂, SiC,
TiO₂, Fe₃C, Fe₇C₃, Fe₂O₃, Fe₃O₄, MoS₂, MoO₂, WC, WO₃ and WS₂.
15. (Three Times Amended) A polishing composition comprising a dispersion of particles, the particles comprising a non-silicon metal compound[s or silicon compounds] with an average particle diameter from about 5 nm to about 50 nm, wherein less than about 1 particle in 10⁶ has a diameter greater than about five times the average diameter.

New claims 26-31 have been added as follows:

- 26. (New) A polishing composition comprising a dispersion of particles, the particles comprising a silicon compound with an average particle diameter from about 5 nm to about 45

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nm, wherein less than about 1 particle in 10^6 has a diameter greater than about five times the average diameter.

27. (New) The polishing composition of claim 26 wherein the particles are dispersed in an aqueous solution.

28. (New) The polishing composition of claim 26 wherein the particles are dispersed in a nonaqueous solution.

29. (New) The polishing composition of claim 26 wherein the silicon compound is selected from the group consisting of SiO_2 and SiC .

30. (New) The polishing composition of claim 26 having a single crystalline phase with a uniformity of at least about 90 percent by weight.

31. (New) A method of smoothing a surface comprising the step of polishing the surface with the polishing composition of claim 26.--